p1020: graded take-home open-note practice exam (version 218)

Question 1

Let f represent a function. If $f[12] = 40$, then there exists a knowable solution to the equation below.

$$y = \frac{f[6(x - 32)]}{2} + 3$$
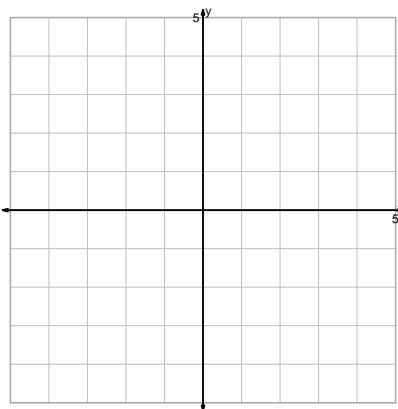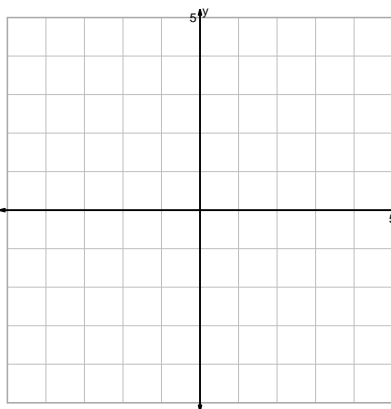
Find the solution.

$x =$

$y =$

Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.
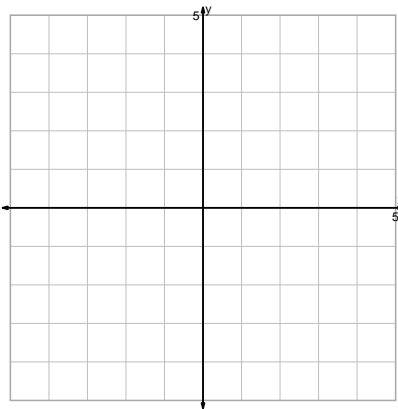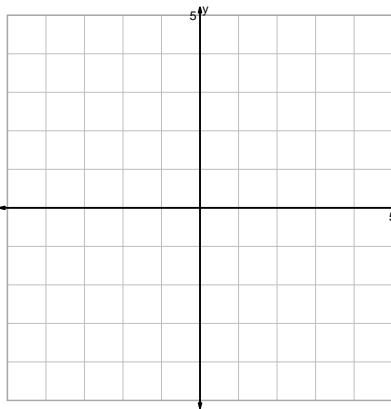
$y = \sqrt{x} - 2$

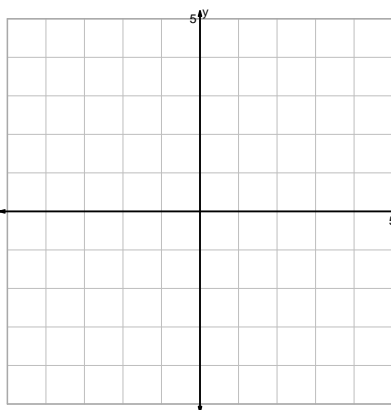

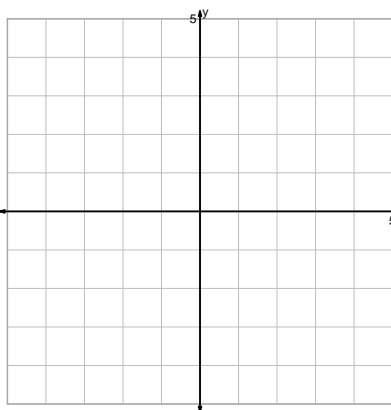$y = \left(\dfrac{x}{2}\right)^3$

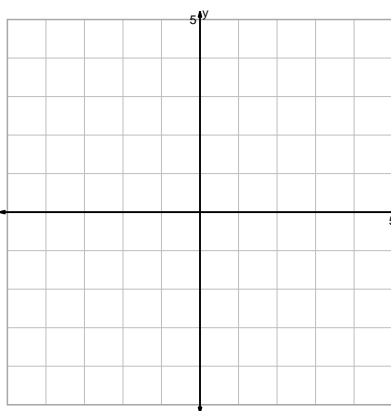$y = \sqrt{-x}$

$y = -\log_2\left(x\right)$
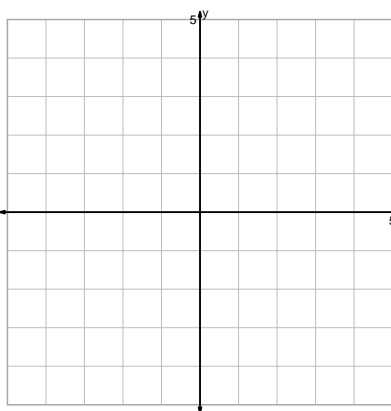
$y = \sqrt[3]{x} + 2$

$y = 2 \cdot x^2$
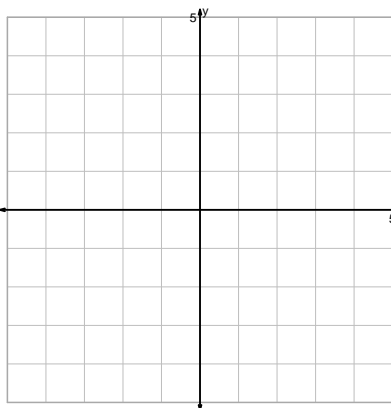
$y = \left(x - 2\right)^3$
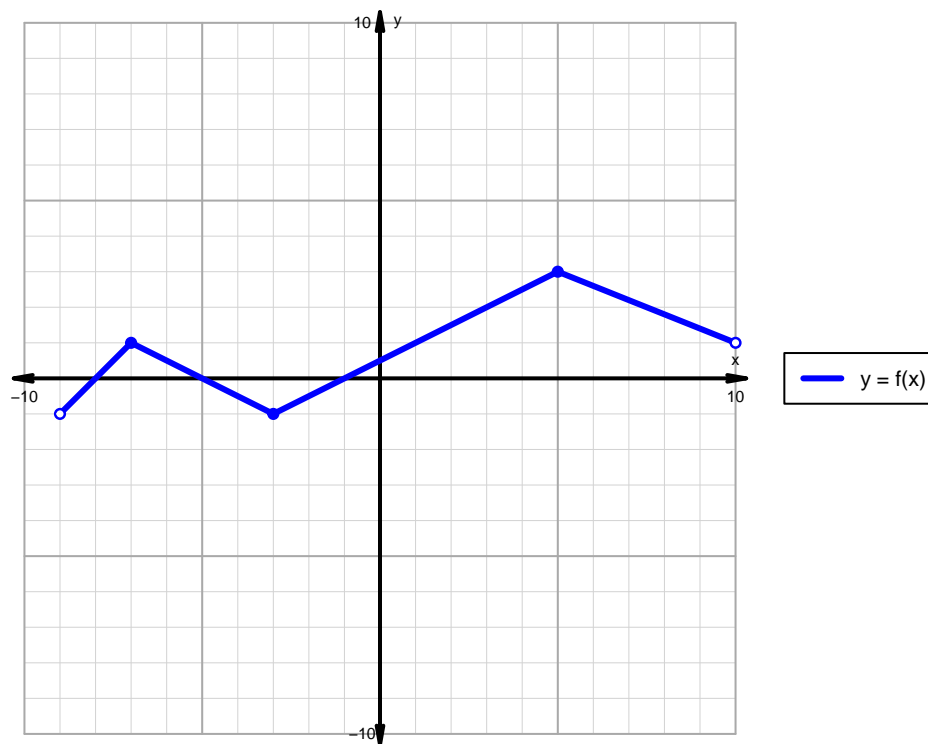
$y = \sqrt[3]{x + 2}$

$y = \dfrac{x^2}{2}$
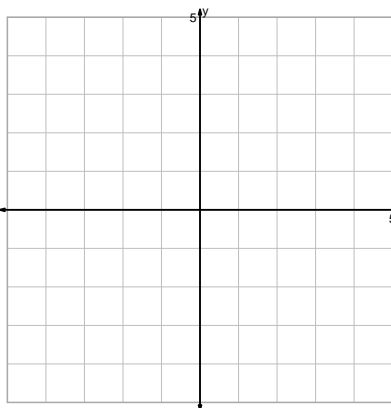
$y = \log_2\left(2x\right)$

Question 3

A function is graphed below.

Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f[6x-3]-5}{4}$ are represented below in a table and on graphs.

a	b	x	y
-93	-31	-15	-9
-75	45	-12	10
-9	-7	-1	-3
57	1	10	-1

$b = f[a]$

$y = \dfrac{f\left[6x-3\right]-5}{4}$
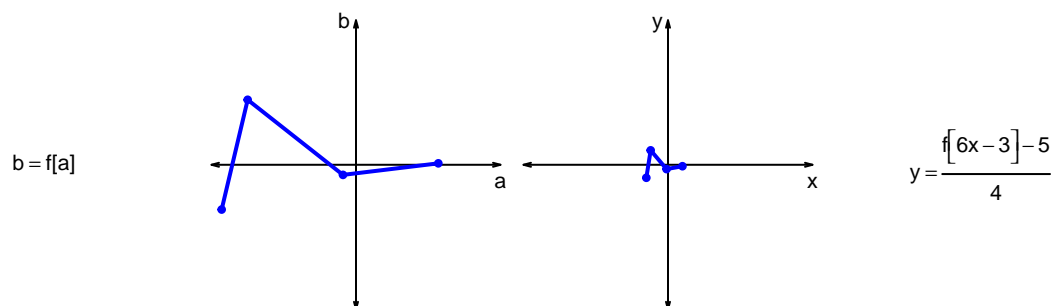
a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f[6x-3]-5}{4}$?

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Question 5

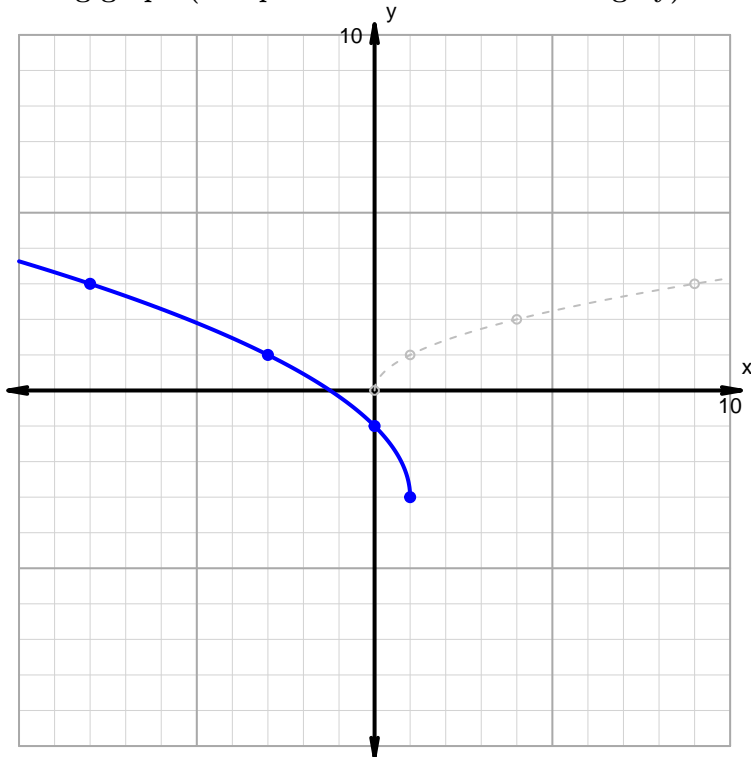A parent square-root function is transformed in the following ways:

Horizontal transformations

1. Translate left by distance 1.
2. Horizontal reflection over y axis.

Vertical transformations

1. Vertical stretch by factor 2.
2. Translate down by distance 3.

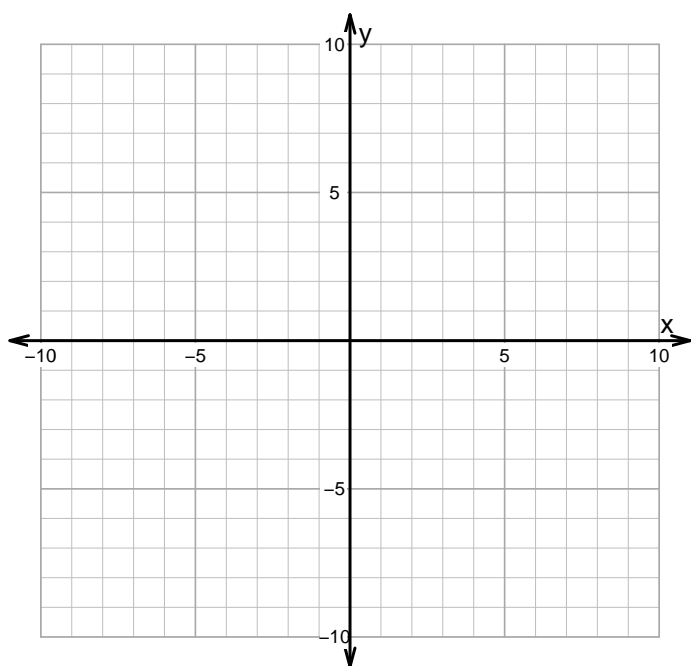**Resulting graph (and parent function in dashed grey):**

- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y = \frac{1}{3} \cdot |x + 5| - 1$$

Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	